

In the United States Court of Federal Claims

No. 11-268C

(Filed: October 28, 2016)

SECURITYPOINT HOLDINGS, INC.,

Plaintiff,

v.

THE UNITED STATES,

Defendant.

35 U.S.C. § 103; Patent validity;
Obviousness; *Graham* factors;
Secondary considerations;
Objective indicia of non-
obviousness; hindsight bias.

Bradley C. Graveline and *Manish K. Mehta*, Chicago, IL, with whom
was *Laura M. Burson*, Los Angeles, CA, for plaintiff.

Lindsay K. Eastman, United States Department of Justice, Civil
Division, Commercial Litigation Branch, Washington, DC, with whom were
Benjamin C. Mizer, Principal Deputy Assistant Attorney General, and *John
Fargo*, Director, for defendant.

OPINION

BRUGGINK, Judge.

This is a patent infringement action brought pursuant to 28 U.S.C. § 1498 (2012). Plaintiff, SecurityPoint Holdings, Inc. (“SecurityPoint”), alleges that the Transportation Security Administration (“TSA”) has infringed claims 1-4, 6-9, and 12-15. of U.S. Patent No. 6,888,460 (“460 patent”) by employing similar or identical means and method for recycling trays and carts at airport security screening checkpoints. Defendant has stipulated to infringement but alleges that the patent is invalid because it was obvious at the time of invention. Trial on the validity of the patent was held on October 19 through October 28, 2015. Because defendant has not met its burden in proving that a person of ordinary skill in the art would have found it obvious to use the method taught by independent Claim 1, we affirm the patent’s validity.

BACKGROUND

The statutory framework of the United States' patent system contains instructions regarding what may be patented, and, if patentable, conditions for patentability. One such condition is that the subject matter of the patent not be obvious. A patent may not be obtained "if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." 35 U.S.C. § 103 (2006).¹ Defendant asserts that a person of ordinary skill in the art of industrial engineering would have considered the 460 patent obvious at the time of invention.

I. Patent and Procedural History

The 460 patent teaches a system of recycling trays through security screening checkpoints by use of movable carts and also teaches the display of advertising and identification tags on the trays. The patent's priority date is July 3, 2002, which is when the inventor, Mr. Joseph Ambrefe, first filed a provisional patent application at the Patent and Trademark Office ("PTO"). Mr. Ambrefe also filed a Petition to Make Special in February 2004, asking for expedited consideration of his application because the patent's use in security screening was related to countering terrorism. That petition was granted by the PTO on May 7, 2004.

During patent prosecution, the PTO examiner initially rejected the application as obvious based on three references, one of which was relevant at trial. That initial rejection was overcome, however, by the addition of language to the first claim, which will be laid out below. The 460 patent was issued on May 3, 2005.

The 460 patent is comprised of one independent claim and 14

¹ Because the patent application was filed before the effective date of the America Invents Act, the earlier version of section 103 applies to the patent. *See Leahy-Smith America Invents Act*, Pub. L. No. 112-29, 125 Stat. 284, 293 (2011).

dependant claims.² Claim 1 discloses a method of

positioning a first tray cart containing trays at the proximate end of a scanning device through which objects may be passed, wherein said scanning device comprises a proximate end and a distal end,

removing a tray from said first tray cart,

passing said tray through said scanning device from said proximate end through to said distal end,

providing a second tray cart at said distal end of said scanning device,

receiving said tray passed through said scanning device in said second tray cart, and

moving said second tray cart to said proximate end of said scanning device so that said trays in said second cart be passed through said scanning device at said proximate end.

JX 1 at 17 (the 460 patent).³ Claim 2 teaches that the scanning device is “selected from a group consisting of a manual inspection station, an x-ray machine, a conveyor belt, and a particulate matter sensor.” *Id.* Claims 3 and 4 add that the trays are “nestable” and have “exposed sides capable of displaying advertising.” *Id.* Claim 6 instructs that the “tray carts are adapted to be rollable.” *Id.* Claim 7 adds that the method of Claim 1 also includes “the step of repositioning said second tray cart from said distal end to said proximate end.” *Id.* Claims 8 and 9 inform that a plurality of the trays are “adapted to receive” various items such as a laptop, camera, purse, coat,

² Patents are comprised of two types of claims: independent and dependent. Independent claims stand on their own as described in a single claim; dependent claims refer to and add further limitations to an independent claim or claims. *See* 35 U.S.C. § 112 (2012).

³ “JX” refers to admitted exhibits offered jointly by both parties. “PX” refers to admitted exhibits offered by plaintiff; “DX” refers to admitted exhibits offered by defendant.”

wallet, cell phone, and other similar items. *Id.* Claim 12 continues by adding a third cart to be used in the method described in Claim 1. Claim 13 inserts a step in which the third cart “containing a plurality of trays” is substituted to replace the first cart. *Id.* Claim 14 makes the bottoms of the trays “adapted to display advertising” on the interior surface of the trays, and Claim 15 teaches that the trays “are adapted to display a tag number.” *Id.*

It was the final step in the method of claim one – “moving said tray cart to said proximate end of said scanning device” – that was added at the PTO to overcome the examiner’s initial obviousness concern. That step differentiated the claimed method from the combination of three prior art references that taught a system to move and/or store trays in a security scanning setting.

The parties asked the court to construe some of the terms used in the claims. After briefing and holding a claim construction hearing, we construed the following terms in the following ways:

The Patent Term	The Court’s Construction
tray	a base with upwardly extending walls
trays	no construction
tray cart	a movable cart capable of holding one or more trays
proximate end	proximal or nearest to; referring to the end of the scanning device where an object enters the device
distal end	farthest from; referring to the end of the scanning device where an object exits the device
nestable	capable of fitting compactly within one another
adapted	suited
receiving said tray passed through said scanning device in said second tray cart	no construction

SecurityPoint Holdings, Inc. v. United States, 111 Fed. Cl. 1, 11 (2013). As is evident above, we declined to construe two of the terms about which the parties disagreed, holding that their ordinary meaning was sufficient. *Id.* at 6, 10. The court also declined to adopt a specific field of relevant art at the time of claim construction because the words of the patent were understandable without doing so. *Id.* at 6.

After claim construction, the parties reached agreement on a stipulation that, presuming the court's claim construction to be correct and thereafter undisturbed, TSA had infringed the 460 patent at various airports around the country. We accepted that stipulation by order on July 3, 2013. Thus only the issues of patent validity and damages remain.

Defendant moved for summary judgment on the issue of invalidity shortly after the infringement stipulation, arguing that the 460 patent was both anticipated by one prior patent and was made obvious by the combination of several prior art references, both patents and other publications. After extensive briefing, we denied that motion because the parties and their experts disagreed as to the field of relevant art and thus what prior art the court should consider, making summary judgment inappropriate. *SecurityPoint Holdings, Inc. v. United States*, No. 11-268C, 2014 WL 810929, at *2 (Fed. Cl. Feb. 24, 2014). We then set the matter for trial.

Before trial, however, defendant moved to stay the case pending an *ex parte* patent reexamination at the PTO. Defendant had requested reexamination in September 2013, which was subsequently granted. We denied the request for a stay because the PTO's determination would not be binding on the court, and we set a pretrial schedule shortly thereafter. In preparation for trial, defendant dropped its anticipation defense, and the parties proceeded to prepare for trial on the defense of obviousness.

In August 2014, the PTO issued a notice that it intended to confirm the patentability of all claims of the 460 patent, which it subsequently did.⁴ This

⁴ The PTO had preliminarily concluded that the claims of the 460 patent were obvious in view of the combination of two pieces of prior art discussed at trial, which will be discussed more fully later in this opinion. The first, "Kierpaul," is an American patent describing an airport checked baggage transport system, and the second, "Heptner," is a European patent application for a tray return

prompted defendant to move for reconsideration of our construction of three terms of the patent: “tray cart” and “proximate end of a scanning device through which objects may be passed,” and “distal end of said scanning device.” We granted defendant’s request for reconsideration in part, reopening the question of the meaning of the term “tray cart” and ordered further briefing on the matter. The chief question presented by defendant, which prompted reconsideration, was whether plaintiff had made a disavowal during the PTO reexamination effectively limiting the meaning of the term “tray cart” in the patent to be “substantially non-metallic.” After briefing and argument, we resolved the question in the negative and confirmed our earlier construction of the term. *SecurityPoint Holdings, Inc. v. United States*, No. 11-268C (Fed. Cl. Feb. 4, 2015) (order confirming earlier construction of the term “tray cart”).

After extensive pretrial motion practice concerning the sufficiency of defendant’s earlier disclosures of its invalidity contentions and proffered prior art, we limited defendant’s experts at trial to testify consistent with their deposition testimony and expert reports regarding combinations of prior art or elements of prior art. *SecurityPoint Holdings, Inc. v. United States*, No. 11-268C (Fed. Cl. July 7, 2015) (order partially granting plaintiff’s May 5, 2015 motion *in limine*). In these depositions, defendant’s experts disclaimed any opinion regarding combinations of prior art and motivations to do so. We instructed defendant that its experts would be so limited in their testimony, and they were so limited at trial.⁵

system at security checkpoints. Ultimately, after voluminous submissions from SecurityPoint, including from the experts it used at trial, the PTO upheld the validity of the 460 patent. The PTO found that the two references combined did not teach each of the steps of Claim 1, and specifically, did not disclose a first and second tray cart. *See* JX 3 at 13198-200. The parties disagree about the importance of this finding by the PTO, both as to the framing of the question to be answered at trial and the burden that defendant must meet to prove obviousness.

⁵ In a later order, we similarly limited defendant’s experts’ testimony regarding modifications to prior art. *See SecurityPoint Holdings, Inc. v. United States*, No. 11-268C (Fed. Cl. Sep. 1, 2015) (pretrial order granting in part plaintiff’s July 6, 2015 motion *in limine*).

II. Evidence And Testimony At Trial

At trial, defendant offered the court a combination of patents and other contemporaneous publications that it argues render the method of the 460 patent obvious. It presented these references through the testimony of its experts, most of whom are trained as industrial engineers and work or worked in the airport design or airport security industry.

A. Patents

Defendant offered eight patents which it argues render the 460 patent obvious. Three of them were considered by the PTO in its examinations of the 460 patent. They are as follows.

1. U.S. Patent No. 6,507,278 (“Brunetti”), a system for control of passenger ingress and egress for airport concourses and other access controlled areas. DX 10. The Brunetti patent teaches a system in which passengers place objects into trays at security screening checkpoints for x-ray or other screening; those trays are then run through a scanning device on conveyor belts. The trays, in the Brunetti system, are “dispensed via chutes adjacent [to] each conveyor” which are “continually supplied from the backside” of the checkpoint by security personnel who are placing the emptied trays back into the chute. DX 10 at 7.

2. U.S. Patent No. 5,934,444 (“Kierpaul”), a tote transport system. DX 17. The Kierpaul patent teaches a tote return system for use in airport luggage handling systems.⁶ The means of which consists of placing luggage in totes at the check-in counter, moving the loaded totes to the airplane loading areas, and then returning the empty, nested totes to the check-in counter on a conveyor. DX 17 at 1, 5. Kierpaul describes the prior art for returning totes to the proximate end of the system to have been the use of carts to manually transport the empty totes back to the beginning of the system. DX 17 at 6; JX 3 at 1031 (Patent Reexam.).

⁶ The totes themselves are not described by the Kierpaul patent other than the introductory paragraph noting that the term “tote” could be used interchangeably with “pallets, containers, bins, or other items suitable for” transporting luggage. DX 17 at 6.

3. European Patent Application No. 1151919 (“Heptner”), a return apparatus for containers. PX 235. Heptner teaches a return system for recycling containers at a security screening checkpoint by sliding the emptied trays back over the screening device on a frame constructed above the screening machine—essentially a slide system for returning the trays using gravity as the prime mover. *Id.* at 19. The Heptner system was intended to be used for a variety of different-sized, nestable trays.

Defendant also offered five other patents not considered by the PTO but which were issued at least one year prior to the priority date of the 460 patent and would have been known to a person skilled in the art of industrial engineering. They are as follows.

4. U.S. Patent No. 3,420,392 (“Flint”), a tray filling and handling system. The Flint patent teaches a system for “filling and handling . . . a plurality of interchangeable, modular trays for loading and unloading the trays at a tray washer, a tray filler, and a tray emptier.” DX 13 at 1:1-15. Flint involved the use of carts to transport large trays between multiple stations and then eventually back to the beginning of the system. The trays are filled with frozen food at the first station, emptied at the second station, washed at the third, and lastly, returned to the first station to be filled again.

5. U.S. Patent No. 6,253,948 (“Ficker”) describes a nestable container with an expandable closure panel covering an access opening in container wall. The Ficker patent teaches a nestable container with at least one opening in a side or end wall for use particularly in retail displays. Also taught by Ficker is the use of a disposable panel which could be displayed on the side of the container suitable for displaying advertising or other information. DX 18 at 2.

6. U.S. Patent No. 6,102,433 (“Stevens”) teaches a compact, manually propelled, wheeled cart for use by passengers to move luggage through airports. DX 28.

7. U.S. Patent No. 5,160,154 (“Seydel”) describes a hand truck for transporting multiple bins. DX 32. The Seydel patent covers a “hand truck[] adapted for holding and transporting more than one . . . package, bundle, open carton, and the like.” DX 32 at 1:8-10. The importance of the Seydel patent in this case is not the particulars of the design but rather that it is an example of carts being used to transport containers in order to save human effort.

8. U.S. Patent No. 3,908,831 (“Brendgord”) teaches the use of a modular system for efficiently handling and storing materials. “The invention relates to a modular system for use in the handling and transfer of materials from storage/retrieval areas, to work areas, to use areas, to post-use disposal or treatment areas, to supply areas and back to storage/retrieval areas for re-use.” DX 38 at 1. Carts are used to transport the modular containers to and from the work and storage areas.

B. Other Prior Art

Defendant also offered four non-patent references, or excerpts from them, as relevant prior art. They are as follows.

1. FAA Recommended Security Guidelines for Airport Planning, Design, and Construction, June 2001. (“2001 FAA Guide”). DX 4. The 2001 FAA Guide was distributed by the FAA to airports and other industry groups. It instructed airports on best practices in security system design. Plaintiff cited the FAA Guide during the patent reexamination process as indicative of the state of the relevant field of art at the time of the invention.

2. TSA Passenger Security Field Guide, June 2002 (“2002 TSA Guide”). DX 5. This was another public document available prior to the 460 patent priority date. It is descriptive of the field of relevant art at the time of the invention, particularly in its instruction regarding the use of trays at screening checkpoints.

3. Handbook of Industrial Engineering, 1992 (“IE Handbook”). DX 6. The IE Handbook is a printed publication used widely in the field of industrial engineering as reference material. It describes general principles and practices known to the field, especially regarding materials handling. This edition’s 1992 date makes it relevant as of the time of the invention.

4. Apron and Terminal Building Planning Manual, July 1975 (“Terminal Manual”). DX 8. This was a printed publication available to the airport industry and used as a reference in the design and planning of airports. Defendant’s expert, Ms. Bender, testified to using it in her practice of designing and optimizing baggage systems.

5. Airport Development Reference Manual, April 1995 (“Airport Reference Manual”). DX 9. Similar to the Terminal Manual, this was a

printed publication used as a reference in the design of airports. Ms. Bender also testified to her use of this document in her practice.

Other exhibits were also introduced and testified about during trial, relating to the secondary objective considerations that we must also consider in reaching an obviousness determination. Those will be separately discussed when relevant below.

C. Testimony at Trial: Defendant's Witnesses

Defendant presented the testimony of five witnesses regarding the field of the invention and what was known in that field prior to the patent date. We list the witnesses and give a brief summary of their testimony here and examine the particulars of their testimony in more detail later.

1. Gloria Bender

Ms. Bender is an industrial engineer who works in the field of transportation and airport security screening operations. She testified regarding the field of art, her experience in it, the prior art within that field, and the sorts of things that someone skilled in the art of industrial engineering would be familiar with and would have employed to solve the sorts of problems aimed at by the 460 patent. She also recalled her own involvement in attempts to streamline security screening checkpoint operations.

2. Robert Cammaroto

Mr. Cammaroto is an expert in airport security screening operations before and after the priority date. He worked his entire career for the FAA and the TSA. He testified regarding the operation of security checkpoints before and after September 11, 2001, what was known in that field prior to the invention (prior art), the level of ordinary skill in that field, and specifically whether the use of carts to move trays through a checkpoint was something known in the field prior to the invention.

3. Robert Gentry

Mr. Gentry is the Assistant Security Director for TSA at the Dallas-Fort Worth International airport. He is a licensed professional engineer in Texas and has a degree in mechanical engineering. He is an expert in industrial

engineering as of 2002 and an expert in security screening operations as of today. He testified regarding the field of art of the invention, the level of ordinary skill in that art, and the application of that skill to the problems aimed at by the 460 patent. He examined several patents and other proffered prior art, explaining to the court what was disclosed by them. He also testified on cross-examination regarding his efforts while at TSA to increase screening efficiency at the airports in Omaha and Dallas/Fort Worth.

4. Jim Spriggs

Mr. Spriggs is the TSA Federal Security Director for the state of Mississippi. He has a degree in industrial engineering and is an expert in both industrial engineering and security screening checkpoint operations both before and after 9/11/2001. He testified regarding the claims of the 460 patent, his opinion of what the field of art of the patent is, the level of ordinary skill in it, the scope and content of other prior art in the field relevant to the problems known in the field, and testified regarding particular pieces of prior art and what is taught by them. He also testified regarding his own experience designing security checkpoints at Detroit Metropolitan Airport.

5. Scot Thaxton

Mr. Thaxton is a TSA employee and was the rule 30(b)(6) designee of defendant. His testimony was presented by agreed-upon deposition excerpts. He testified regarding airport design and planning guides used by FAA and TSA, efforts to standardize and optimize trays and carts at screening checkpoints, and the success of the 460 patent in doing so.

D. Testimony at Trial: Plaintiff's Witnesses

Plaintiff presented seven witnesses who testified regarding the invention itself, efforts to sell the invention, the early results from using the invention, the field of the invention, and why it was not obvious to one skilled in the art of security screening operations to use the method claimed by the 460 patent.

1. Joseph Ambrefe

Mr. Ambrefe, the inventor of the 460 patent, testified regarding his "ah ha" moment and how the idea for the 460 patent came about. He testified

extensively regarding the business that he built to sell the method to airports and the TSA and his early endeavors in doing so. He testified regarding the success of the method in early tests and the eventual commercial success after it was adopted at more airports.

2. Douglas Linehan

Mr. Linehan is the Vice President of Operations at SecurityPoint. He offered additional testimony regarding the success of the method once employed at airports and facts relevant to various objective indicia of non-obviousness. He testified about the process of patenting the invention and then the early efforts to market the method to airports and TSA once patented.

3. Marcus Arroyo

Mr. Arroyo is an expert in security checkpoint operations. He worked for the FAA from 1986 until 2002 and then for TSA from 2002 through 2006. While at TSA, he served as the Federal Security Director at Newark Airport. He testified regarding security screening checkpoint operations, before and after the patent date. He also opined regarding the non-obviousness of each of the claims of the 460 patent. He also gave testimony regarding several of the secondary considerations of non-obviousness: long-felt need, failure of others, copying, professional approval, and unexpected results.

4. Dr. Layek Abdel-Malek

Dr. Abdel-Malek is an expert in industrial engineering. He testified regarding the field of pertinent art, the level of ordinary skill within that field, the prior art within that field, the differences between the claimed method and that prior art, and the secondary considerations of non-obviousness. His testimony mainly concerned why the claims of the 460 patent would not have been obvious to an industrial engineer at the time of the invention.

5. Monica Serrano

Ms. Serrano is SecurityPoint's Director of Network Development. Prior to her employment at plaintiff, she worked in the airline industry and was involved in security screening projects for United Airlines and other industry groups. At United, she oversaw the airline's compliance with FAA security regulations, overseeing the checkpoints prior to 9/11/2001, when airlines were

responsible for checkpoint operations. After September 11, 2001, she was the security manager for United Airlines at the Denver airport. She testified regarding the field of security checkpoint operations prior to the invention and the problems then encountered. She testified regarding her involvement in redesigning security checkpoints in an effort to decrease waiting times and increase efficiency at the Denver airport in October 2001.

6. Timothy Hollifield

Mr. Hollifield is a manufacturing and mechanical engineer who was involved in security checkpoint operations at the National Safe Skies Alliance (“NSSA”) in Knoxville, TN from 2001 to 2011. He testified regarding the testing that NSSA did for TSA of security screening checkpoint operations after 9/11/2001, which included testing of SecurityPoint’s patented method. He further testified regarding the rollout of live testing of the 460 method at the McGhee Tyson Airport in Knoxville. He testified regarding the success of these tests and the efficiency gained from the 460 method.

7. Scot Thaxton

Plaintiff also designated portions of Mr. Thaxton’s deposition testimony.

8. Michael Elliot

Mr. Elliot is an Assistant Federal Security Director for screening at Baltimore-Washington International Airport (“BWI”). He has been in that position since December 2006. Prior to that he worked in security for a private contractor at the Harrisburg International Airport from 1992-2002. Mr. Elliot testified by video deposition regarding efforts to speed up screening at BWI in 2008. One method in particular which was attempted for approximately 90 days included the use of a mechanized tray return.

We will discuss the particulars of the testimony in more detail below as relevant to our examination of each of the questions involved in the obviousness determination.

DISCUSSION

An invention is entitled to be patented so long as the invention is novel,

meaning that it was not already known publically at the time of the claimed invention as evidenced by a prior patent, sale to the public, disclosure in a publication, or was otherwise generally known. 35 U.S.C. § 102(a) (2012). Additionally, “if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date . . . to a person having ordinary skill in the art to which the claimed invention pertains,” the invention is not patentable, or, if a patent was issued, it is invalid. *Id.* § 103. The question of obviousness is thus a comparison between what is claimed to have been invented in the patent and what was already known to a person of ordinary skill in the field of art pertaining to the invention.

The inquiry begins with the statutory presumption that a patent is valid. *See* 35 U.S.C. § 282 (2012) (“A patent shall be presumed valid.”). The party challenging a patent bears the burden of proving invalidity by clear and convincing evidence.⁷ *Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1327 (Fed. Cir. 2008). Patent validity is a question of law. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966). But the question can only be answered after making certain factual determinations. *Id.* In the context of an obviousness inquiry, the trier of fact must determine “the scope and content of the prior art,” the “differences between the prior art and the claims” of the patent at issue, and “the level of ordinary skill in the pertinent art.” *Id.* Further relevant to the question of obviousness are “secondary considerations” such as “commercial success, long felt but unsolved needs, failure of others, etc.,” which can be “utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented.” *Id.* at 17-18.

⁷ Plaintiff also argued that when, as here, a patent has been upheld by the PTO in an *ex parte* review, the burden of proof is increased for the challenger of validity because it must also prove the PTO wrong. *See Am. Hoist & Derrick Co. Sowa & Sons, Inc.*, 725 F.2d 1350, 1360 (Fed. Cir. 1984) (“When an attacker simply goes over the same ground travelled by the PTO, part of the *burden* is to show that the PTO was wrong in its decision to grant the patent.”). Defendant disagrees, arguing that the law imposes a single standard for obviousness regardless of whether the patent has been reexamined by the PTO. We need not resolve this disagreement, however, because of our holding that defendant did not meet its burden of clear and convincing evidence of obviousness.

I. The Problem Solved By The Invention

In determining the scope and content of the prior art, courts often consider the problem solved by the invention because it is instructive as to what a person reasonably skilled in the art of the invention would have known or would have consulted to answer the question presented by the problem. *See, e.g., Circuit Check, Inc. v. QXQ Inc.*, 795 F.3d 1331, 1335 (Fed. Cir. 2015) (“Prior art is analogous . . . if it is reasonably pertinent to the particular problem the inventor is trying to solve.”). The Supreme Court has stated one formulation of the broader obviousness inquiry thus as “one of the ways in which a patent’s subject matter can be proved obvious is by noting that there existed at the time of the invention a known problem for which there was an obvious solution encompassed by the patent’s claims.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 419-20 (2007).

Here, the words of the patent’s background section and testimony of its inventor, Mr. Ambrefe, are quite clear as to the general problem at which the invention is aimed: “There exists a need for a system for a security area for moving the trays from a starting position to an ending position which allows the trays to be efficiently utilized, gathered and stored to be later used again.” JX 1 at 12. There was a need to effectively position and efficiently move the trays used by passengers because of the ever-increasing number of items that had to be divested from passengers and then screened at security checkpoints, especially after September 11, 2001. The number of trays necessary to gather and move the items through the screening device created clutter and general inefficiency at the checkpoints. *Id.* Mr. Ambrefe explained that efficiency is gained by providing a single location for the trays to be placed when not in use and a means for recycling those trays from the end of the screening device back to the beginning. Tr. 1111. In simple terms, the question confronted by the 460 patent’s method is what to do with the trays at security screening checkpoints when they are not yet in use by passengers, both before passengers divest their personal items into the trays and then after they retrieve their items on the other side of the scanner. The 460 patent answers that question by teaching a method of using standardized trays and employing multiple carts to recycle the trays from the end of the scanning device back to the beginning of it. As Mr. Ambrefe phrased it, the trays “live” in the carts when not in use by passengers.

II. The Scope And Content Of The Prior Art

In order to properly compare the prior art with the claims of the patent, the court, as the trier of fact, must limit the references that it considers to those which are in the same field of endeavor as that of the invention and those reasonably analogous to it. *Wyers v. Master Lock Co.*, 616 F.3d 1231, 137-38 (Fed. Cir. 2010). Similarity in structure and function between the claimed invention and the cited prior art is indicative of the field in which the invention belongs. See *In re Bigio*, 3118 F.3d 1320, 1325-26 (Fed. Cir. 2004); *State Contracting v. Condotte Am.*, 346 F.3d 1057, 1069 (Fed. Cir. 2003). Highly relevant are the words of the patent's description, but the "inventor's subjective intent or knowledge at the time of the invention" is not controlling. *In re Singhal*, 602 Fed. Appx. 826, 830 (Fed. Cir. 2015).

A. The Field of Endeavor is Security Screening Checkpoint Operations

The parties disagree as to the field in which the invention belongs. Defendant offers the field of industrial engineering. It argues that the efficient movement of objects through a closed loop system is a classic problem embraced by the field of industrial engineering. It avers that trays and carts are classical implements used by industrial engineers to solve similar problems in the field. Defendant further points to the incidence of these implements in the prior art references that it offers the court from the field of industrial engineering, arguing that this shows a similarity in structure and function between the 460 patent and these references.

Plaintiff responds that the 460 patent's method for revolving trays and carts around a scanning device is properly understood only within the field of security screening checkpoint operations. Plaintiff points to the words of the patent's description, in which the setting is clearly security screening checkpoints, and the patent's petition to make special based on its application in security in screening. Plaintiff also argues that defendant's witnesses either failed to rebut or affirmatively agreed with SecurityPoint's position that the field of the invention is security screening.

Plaintiff points out that defendants own experts, Ms. Bender, Mr. Gentry, Mr. Cammaroto, and Mr. Spriggs, all have experience working in the airline industry or airline security industry and have worked on projects regarding security checkpoints. Plaintiff further offers the testimony of its own two experts, Mr. Arroyo and Dr. Abdel-Malek, who both testified that

security checkpoint/screening operations is a specialized field of knowledge with its own particular complexity; and Dr. Abdel-Malek, himself an industrial engineer, claimed that a “common industrial engineer will not be able to comprehend the entirety of the complexity within that endeavor.” Tr. 1847.

We begin by noting that the law regarding the obviousness of patents imposes an unfortunate level of artificiality when, as here, the patent at issue concerns common implements and simple terminology. As we noted during claim construction, a finding of a specific field of art was unnecessary to understand and construe the patent’s terms. 111 Fed. Cl. at 6. In fact, at the time, defendant did not offer a specific field because of the simplicity of the patent’s terms. *Id.* During summary judgment briefing on the question of validity, defendant agreed for the purposes of those motions that the field was security screening operations, but its experts made no effort to neatly limit themselves, which, in part, created a fact issue amenable only to resolution at trial. After hearing two weeks of testimony at trial, we are sympathetic to their earlier lack of precision.

The unfortunate result of the artificiality of having to choose either of two proposed fields of art, is that, by choosing between them, otherwise relevant and seemingly knowledgeable testimony regarding the patent’s claims and other prior art is unavailable. An expert in any field other than that chosen as the relevant one is presumed by the law to be ignorant of anything useful regarding the patent or comparing it to other pieces of art, even if those other pieces of art are in that particular expert’s field of expertise. *See Sundance, Inc. v. Demonte Fabricating Ltd.*, 550 F.3d 1356, 1365 (Fed. Cir. 2008). An expert in the field chosen by the court, however, need not limit his or her opinion to pieces of art only in that field if that expert’s side can show that the outside pieces of art are reasonably pertinent to the problem aimed at by the patent.⁸

Forced to choose a field of art rather than craft a hybrid, we choose plaintiff’s field. The invention is used at security screening checkpoints and

⁸ A similar rule for considering the testimony of experts in fields reasonably related to the questions answered by the patent at issue might allow, at least in some circumstances, the sort of flexibility in the obviousness determination that Supreme Court has stated should be employed in this context. *See KSR*, 550 U.S. at 415-19.

the problems aimed at by the patent are a result of that setting. Although the patent is simple and we remain convinced that no specialized training or experience is needed to understand its words, it must reside within some field of speciality. It cannot claim every possible pattern of moving trays by carts around a stationary scanning device within all the fields of human endeavor. The problem aimed at, the inefficient movement of passengers and their property through the checkpoint, suggests the field of art. To say that the problem is more simply one of the efficient movement of material in a closed loop system ignores the particularities of the security screening setting, which create the very problems embraced by the patent.

A good example of the problem of removing the 460 patent from its intended setting is seen in one of defendant's proffered pieces of prior art, the Flint patent.⁹ Flint teaches a system for processing and packaging frozen foods by means of trays circulated through various stations of a closed loop system. Although it shares the commonality of being a closed loop system that recycles trays by use of carts, its setting in an industrial facility makes it alien to the space constraints imposed by the setting of the 460 patent. Further, when considering the variable of a fluctuating stream of humans (not operators) through the security screening system, the Flint patent is further divorced from the reality of the 460 patent's world. Industrial engineering is a field too broad for the problems embraced by the patent in suit.

The fact that defendant's experts, Ms. Bender, Mr. Gentry, Mr. Cammaroto, and Mr. Spriggs, are employed or have been employed in capacities involving security screening checkpoint operations is telling. Their testimony was often imprecise regarding whether the opinion offered was coming from their vantage point as engineers or whether their expertise in security screening had also informed their answer. Dr. Abdel-Malek testified that he found it difficult to distinguish which expertise was being applied when he reviewed defendant's experts' reports as well. *See* Tr. 1871. Mr. Spriggs admitted during cross-examination that, although he thought that the relevant field of art was industrial engineering, experience with the operation of security screening checkpoints would be very helpful in understanding the 460

⁹ We note that none of defendant's experts actually testified that the Flint patent resides in the field of industrial engineering, and it certainly does not reside in the field of security screening checkpoint operations. We assume defendant proffered the Flint patent as from the field of industrial engineering.

patent. Tr. 228-29. He was careful, however, not to admit that such experience is necessary to understand the patent. Mr. Gentry likewise thought that experience with security screening operation would be helpful for a person of ordinary skill in the art. Tr. 677.

Mr. Arroyo's testimony that the operation of security checkpoints is complex and offers its own set of unique challenges is credible, particularly in light of the consistent testimony of many of the witnesses on both sides that the problem of checkpoint efficiency was difficult and largely unsolved prior to the implementation of the 460 patent's method.¹⁰ Mr. Arroyo concluded, when considering the difficulties faced in the field of security screening and the problems embraced by the patent, that the relevant field of the 460 patent is security screening checkpoint operations. We agree.¹¹

B. The Person of Ordinary Skill in the Art is an Expert in Security Screening Checkpoint Operations

Having established that the field of endeavor is security screening checkpoint operations, it follows that the person of ordinary skill in the art is a person with a comprehensive understanding of the operation of security screening checkpoints. We note that defendant's experts all have this experience themselves, and we have thus considered their testimony as relevant as it applies to the particular questions answered below.

¹⁰ We note that our holding in this regard is not dependent on Dr. Abdel-Malek's testimony that he could not understand the mysteries of the 460 patent's method as an industrial engineer. Although he offered that bare opinion at trial, he did not explain how or why the methods taught were too opaque for him and those like him in his field. It matters not, however, as we find the problem sought to be solved by the patent is constrained to the field of security screening checkpoint operations.

¹¹ That is not to say, however, that we have thus ignored all of the testimony from defendant's experts from the vantage point of their expertise as industrial engineers. Our ultimate conclusion remains the same whether the field of art is industrial engineering or security screening checkpoint operations. We have thus discussed, when relevant, citations by defendant's experts to pieces of art outside of the field chosen here.

C. The Scope of the Prior Art

The scope of the analogous prior art is a product of the field of the invention and the question sought to be solved by the invention. *See Circuit Check, Inc. v. QXQ Inc.*, 795 F.3d 1331, 1335 (Fed. Cir. 2015). Even if not in the same field of invention as the patent, if a reference is reasonably pertinent to the problem sought to be solved, it is analogous. *Id.* We have established that the field of the invention is security screening checkpoint operations. Thus the scope of the analogous prior art includes references reasonably pertinent to that. Brunetti, Heptner, the 2001 FAA Guide, the 2002 TSA Guide, the Terminal Manual, and the Airport Reference Manual are all within this field or reasonable pertinent to it.

We also hold that the Kierpaul patent is relevant, as did the PTO, and have considered it below as prior art. The Federal Circuit, applying *KSR*, has made clear that analogous art should be construed broadly because “‘familiar items may have obvious uses beyond their primary purposes, and a person of ordinary skill often will be able to fit the teachings of multiple patents together like pieces of a puzzle.’” *Wyers*, 616 F.3d at 1238 (quoting *KSR*, 550 U.S. at 420). The Kierpaul patent involves the movement of checked airline baggage, a field reasonably analogous to security screening and also set in the larger airport context.

The references regarding specific cart designs and modular storage systems, however, we find to be too far afield. They are not reasonably pertinent to the problems aimed at by the patent and are thus not analogous art. No expert testified why these references would have been obvious to use in combination with any of the references above or why they might have been consulted at all by a person of ordinary skill in the operation of security checkpoints.

We also find that the Flint patent is not analogous art. Beyond the fact that it has nothing to do with security screening, no witness explained why it would be consulted by a skilled artisan outside of the inference drawn from the fact that it also moves trays with carts. This is true even assuming the field of art were industrial engineering. We simply did not hear why it would have been obvious to look to Flint for the solution of using of multiple carts in the setting embraced by the 460 patent nor how Flint would suggest that carts be used in the specific steps taught by the 460 patent.

III. Comparing The Prior Art With The Claimed Invention

The court must now compare the prior art with the claims of the 460 patent. The 460 patent teaches a method in independent Claim 1 whereby a tray full of carts is positioned at the proximate end of a scanning device (the end that feeds the scanner), a tray is taken from the first tray cart and passed through the scanning device to the distal end, the tray is placed in a second tray cart positioned at the distal end of the scanning device, and the second tray cart is moved to the proximate end of the scanning device, thereby bringing empty trays back to the proximate end.¹² JX 1 at 17. The dependent claims that follow the first claim further refine and limit it, but we begin with the simpler method as described in Claim 1.

A. The Trays and Carts Method of Claim 1

The parties collectively refer to independent Claim 1 as the “trays and carts method.” As a matter of law, if it stands as valid, the rest of the dependent claims follow. *Hartness Int’l, Inc. v. Simplimatic Eng’g Co.*, 819 F.2d 1100, 1108 (Fed. Cir. 1987) (stating that it is *a fortiori* that a dependent claim is not obvious when the independent claim that it incorporates is not obvious). Because we find Claim 1 not to be obvious, we need not separately consider the validity of the dependent claims.

Defendant presents the Brunetti patent, filed in 2000, as indicative of the state of the art, specifically in airport checkpoints, prior to the invention. Brunetti describes checkpoints as including conveyors to move items through a scanning device and trays into which passengers could put their personal items while being screened. DX 10 at 13 (conveyors), 16 (trays), 17 (trays). As to how trays might be resupplied at the start of the process, Brunetti describes a chute “adjacent [to] each conveyor” through which trays “are continually supplied from the backside . . . by screening personnel.” *Id.* at 16. Although no witness testified that this method was adopted in whole at any specific airport, defendant presents it as a general picture of the state of the

¹² As a preliminary matter, the parties presented the court with a disagreement in the post-trial briefing regarding whether the steps of Claim 1 must be performed in order. We find it unnecessary to resolve that dispute because defendant’s obviousness challenge fails for a more basic reason.

field at the time of the invention.¹³

Plaintiff's witnesses, Mr. Arroyo and Ms. Serrano, described the state of the art at the time regarding the recycling of trays to be accomplished by security personnel carrying trays from the end point back to the beginning point. Likewise, the 2002 TSA Guide states that a "bin runner" was employed to bring empty bins from the exit side of the checkpoint back to the entrance side. DX 5 at 42. The Kierpaul patent similarly describes the state of a baggage handling systems at airports as requiring the use of a cart to manually return luggage totes to the check-in counter. DX 17 at 6.

Defendant points the court to the Flint patent as supplying the missing link between what was already known in the art—using trays and carts generally—with the use of multiple carts to recycle the trays from the end back to the beginning of the system. The Flint invention includes the use of six carts to move trays from station to station in a tray filling and handling system, eventually ending with the recycling of the first tray back to the beginning of the system for reuse. DX 13 at 1 (Figure 1).

In defendant's view, the combination of Brunetti and Flint provide all of the elements of the 460 patent's method. Defendant asks the court to consider the ordinary creativity of an industrial engineer to combine the teachings of Flint and Brunetti to come up with the method of the 460 patent. Defendant points to the testimony of Ms. Bender, who informed the court that carts are commonly employed in the field of industrial engineering as a means of solving materials handling problems. She went as far as to state that they are "ubiquitous" in the field. Tr. 889. This is enough, according to the government, because carts are a common implement in the field and a person of ordinary skill using ordinary creativity "knows how to combine familiar prior art elements to achieve the same functions." *Tyco Health Grp. v. Ethicon Endo-Surgery*, 774 F.3d 968, 978 (Fed. Cir. 2014). Carts not being novel in industrial engineering and having been disclosed in the Flint and Kierpaul patents, defendant argues that it has met the burden of clear and convincing evidence that Claim 1 of the 460 patent is obvious.

¹³ This is another example of the imprecision in choosing a field of art. Defendant's proffered field is that of industrial engineering. Despite that, or perhaps as a tacit admission, the reference offered as a general description of the field is much more narrowly tailored towards security screening.

Plaintiff counters that defendant has proved no such case because, even assuming the field of industrial engineering as relevant, the government's witnesses did not testify that they would have used ordinary creativity to combine these familiar elements in the same way as the method described in Claim 1. SecurityPoint asks the court to ignore Ms. Bender's statement about the common use of carts in the field because it is too broad to be of relevance to the problem encountered by the 460 patent. It is not that carts are used generally in the field of industrial engineering that is relevant, but instead the application of that element to the problem at hand that is important, argues plaintiff. Plaintiff points out that Ms. Bender was not asked nor did she otherwise opine that she would have used a first and second tray cart in the manner described by the 460 patent.

Plaintiff further offers as a counterpoint the testimony of Mr. Arroyo. He opined that it would not have been obvious to use carts in a security screening checkpoint prior to the invention. He testified that this was primarily for two reasons: 1) carts were thought to be a safety hazard at checkpoints, and 2) carts would have impeded the flow of passengers through a checkpoint.¹⁴ Tr. 1593-94. He also opined that several prior art references taught methods that would suggest against using tray carts as employed by the 460 patent. Tr. 1612, 1635 (referencing Heptner and the 2002 TSA Guide as teaching away because they both employed tray return methods other than the use of carts). Regarding Brunetti, Mr. Arroyo stated that it did not render the 460 patent obvious because the return of carts at a checkpoint was only addressed in a passing reference to the use of a chute adjacent to the conveyor belt to return trays. For Flint, he testified that it had little to no relevance to the question at hand because it did not involve the movement of people whatsoever, a crucial element in the problem aimed at by SecurityPoint's patent. With regard to Kierpaul, he found it not to be analogous, i.e., not related to security screening, and further that it did not disclose any steps of the 460 method. He noted that the Kierpaul invention was largely a process of

¹⁴ Mr. Arroyo was also asked a series of direct questions regarding the obviousness of each of the claims of the 460 patent. His answers in the negative were largely without explanation or reason for his opinion. We did not find this particular series of answers helpful. That, however, is not particularly problematic for plaintiff because it does not bear the burden of proving validity. As explained further herein, Mr. Arroyo provided other testimony that was helpful to the court.

automation of tray return, aimed at reducing or eliminating manual labor and oversight of tray return. Although unstated by Mr. Arroyo, the inference is that this is unlike the 460 method's use of a cart, which, although faster and more efficient than without, still requires manual operation.

We begin with the obvious: carts were not altogether unknown in the airport setting, and as previously stated, we do find Kierpaul to be analogous art. Further, presuming *arguendo* that the government's field is correct, carts were well known in the field of industrial engineering for handling and transporting material. Granting either point does not end the inquiry, however. The party asserting obviousness must prove by clear and convincing evidence that employing the known element in the claimed manner would have been obvious to a person of ordinary skill at the time of invention.

Although Ms. Bender's testimony regarding carts was more specific than plaintiff's characterization of it, we find it insufficient in this regard. She testified that the use of carts would have been the simplest and most cost effective way to transport trays at a security screening checkpoint, Tr. 884, and that it thus would have been obvious to use a cart to return trays to the start of screening checkpoint, Tr. 888. That opinion stops short of the critical step of using them in the manner described by Claim 1: positioning a first cart at the proximate end, positioning a second cart at the distal end, and then recycling the cart containing the trays that have passed through the screening device by repositioning the second cart at the proximate end of the checkpoint.¹⁵ We also have the testimony of Mr. Arroyo, which stands in opposition to Ms. Bender's regarding the design incentives and reasons known at the time to use carts at security checkpoints.

The trays and carts method of the 460 patent, while simple and employing common implements, was not disclosed by any single reference offered at trial nor did any witness opine that a combination of those references would have been obvious. Defendant's argument that ordinary creativity of the skilled artisan suggested the combination of Brunetti (trays) and Flint (carts) is a bridge too far. Defendant's disavowal in pretrial practice of having its experts combine prior art was a serious handicap at trial. Not having elicited such an opinion directly, defendant offers another approach to

¹⁵ We note that it was that critical third step that the patent examiner found to have made the invention novel during its original patent prosecution.

reaching the obviousness conclusion.

Defendant asks the court to bridge the gap between the various prior art references and the claimed invention by taking notice of

the knowledge of those of ordinary skill in the art, the nature of the problem to be solved, market forces, design incentives, the interrelated teachings of multiple patents, any need or problem known in the field of endeavor at the time of invention and addressed by the patent, or the background knowledge, creativity, and common sense of the person of ordinary skill.

Def.'s Post-Trial Br. 24 (quoting *Cimline, Inc. v. Crafco, Inc.*, 413 F. App'x 240, 245 (Fed. Cir. 2011)). In view of all of these relevant considerations, defendant argues that direct opinion testimony from a skilled artisan regarding the combination of references to reach a conclusion of obviousness is unnecessary, particularly when both the invention and prior art references are "easily understandable without the need for expert explanatory testimony." *Union Carbide Corp. v. Am. Can. Co.*, 724 F.2d 1567, 1573 (Fed. Cir. 1984).

Defendant lays out the following points for us to consider in hopes that we will bridge that gap. It points to the known problem of the increase in the number and size of trays employed at checkpoints after September 11, 2001, as testified to by Mr. Cammaroto and recognized in the 2002 TSA Guide. Defendant argues that the evidence further shows a recognized need for an efficient and flexible tray return system prior to the invention, as evidenced by the TSA Guide and the Heptner and Brunetti patents. Defendant urges that there was a reasonable expectation of success in applying the steps of the 460 patent as written because there was sufficient space available at checkpoints to position carts. Msrs. Spriggs and Cammaroto testified that concessions were carried through checkpoints on carts to retailers inside the secured area prior to the invention. Further, wheelchairs were routinely allowed through checkpoints, suggesting sufficient space for several carts at a checkpoint. The use of carts was widely known at airports for the transport of luggage from curb to check-in, and the 2001 FAA Guide recommended positioning such carts on both sides of security checkpoints. Carts were known in the field of industrial engineering as a flexible and efficient solution for materials handling and transport problems, says defendant, citing the IE Handbook, and the Brendgord patent (modular storage system), Seydel (hand cart), and Stevens (cart) patents. The use of carts as claimed by the patent would not have

required any undue experimentation to invent by a person of ordinary skill because carts were used at airports routinely and were an elegant and known solution to problems at hand, states defendant in its briefing. The net effect of all of which is that the court has ample evidence upon which to rest a conclusion that a combination of the known elements in the manner claimed by the invention was obvious. We cannot go so far.¹⁶

In the absence of direct testimony from one skilled in the art as to the obviousness of each step of Claim 1, finding it obvious would require an impermissible exercise of hindsight. Courts have long cautioned against interjecting into the obviousness determination the fact finder's own opinion on the novelty of the invention. *See, e.g., Diamond Rubber Co. of NY v. Consol. Rubber Tire Co.*, 220 U.S. 428, 435 (1911) ("Knowledge after the event is always easy, and problems once solved present no difficulties, indeed, may be represented as never having had any . . ."); *Plantronics*, 724 F.3d at 1354.

There are two primary safeguards against that hindsight. The first is testimony of skilled artisans. *Outside the Box Innovations, LLC v. Travel Caddy, Inc.*, 695 F.3d 1285, 1297 (Fed. Cir. 2012) ("The foil to judicial hindsight is the testimony of persons experienced in the field."). We have the testimony of Ms. Bender that the use of a cart to transport trays through a checkpoint was the simplest method available at the time and was thus obvious to her. We have already explained that this testimony, even if wholly credited, is insufficient. It fails to consider the steps claimed in the method of the 460 patent's first claim.

Further, Ms. Bender's testimony in this regard smacks of hindsight.

¹⁶ It bears repeating that this string of evidence cited by defendant is in large part either irrelevant or incomplete. The references dealing with cart and modular tray design are not in the relevant field of art, and no person with ordinary skill in the art testified why they should otherwise have been consulted, not did any industrial engineer. Further, the fact that carts are known in one capacity or another at airports, though somewhat relevant, is not the end of the inquiry. Asking the court to supply the logic link between the fact that carts were on occasion allowed through checkpoints for other reasons and the idea that they should thus be employed in the fashion taught by the 460 patent would be an exercise impermissibly biased by hindsight.

She was herself employed to consider the precise questions embraced by the patent at issue. She and her firm conducted field studies and modeling at various airport checkpoints and attempted to find solutions for the growing congestion post-9/11/2001, both before and after the invention date (July 2002). She did not offer a cart in any capacity as a solution to the problem of growing security lines, let alone the dual cart method as laid out in Claim 1 of the 460 patent. When asked “why” on cross-examination, she stated that the lack of bins (trays) at the airports she studied did not suggest a solution that involved speeding up their return from one end of a checkpoint to the other and that she has otherwise struggled with that very question. Tr. 1029, 1037-38. She also agreed that, as of July 2002, space constraints at checkpoints were a problem confronting her and others in the field. Tr. 1038. We must conclude that her testimony regarding the use of carts at security checkpoints as of July 2002 is insufficient to prove the steps of Claim 1 obvious. Some of her testimony in this regard even suggests the opposite, that plaintiff’s position, especially as evinced by the testimony of Mr. Arroyo is correct: the space constraints at checkpoints suggests away from introducing carts to the setting, and the fact that trays were already present at checkpoints did not make it obvious to use them along with carts in the manner prescribed by the 460 patent.

B. Secondary Considerations

The second safeguard against hindsight bias in the obviousness determination is “evidence of the objective indicia of nonobviousness.” *Plantronics*, 724 F.3d at 1354-55. These factual considerations assist the court in judging the novelty of an invention by providing a tool to view the subject of the patent as of the time it was invented. They are often the most probative evidence and may not be ignored. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538 (Fed. Cir. 1983).

The burden to produce evidence of the objective indicia is on plaintiff. As part of that burden, plaintiff must make a *prima facie* demonstration of a nexus between the claimed method and the secondary evidence of success. *MRC Innovations, Inc. v. Hunter Mfg., LLP*, 747 F.3d 1326, 1336 (Fed. Cir. 2014). That is to say that the success claimed as evidence of the novelty of the invention must be due to the thing claimed by the patent or be sufficiently related to it. *See Demaco Corp. v. F. Von Langsdorff Licensing, Ltd.*, 851 F.2d 1387, 1392 (Fed. Cir. 1988). Once that *prima facie* showing has been made, the burden shifts to defendant to rebut that evidence. *Crocs, Inc. v. ITC*, 598

F.3d 1294, 1311 (Fed. Cir. 2010).

Here, plaintiff argues that the evidence establishes seven separate objective indicia of non-obviousness. We consider them each in turn below.

1. Unexpected Results

When “the claimed invention exhibits some superior property or advantage that a person of ordinary skill in the relevant art would have found surprising or unexpected,” that suggests to the court that it was not obvious. *In re Soni*, 54 F.3d 746, 750 (Fed. Cir. 1995). Plaintiff points to a major increase in efficiency in passenger throughput and safety resulting from the use of its method as just such an unexpected result.

Plaintiff cites a TSA Information Bulletin, dated December 22, 2006, in which the agency cited an 80 percent increase in screening efficiency and a 90 percent reduction in injury after implementing SecurityPoint’s trays and carts method during a three month pilot program at Los Angeles International Airport (“LAX”). *See* PX 84. Those figures were again recited in a TSA publication several days later. *See* PX 202 at 3 (TSA Public Affairs Guidance, December 28, 2006).

Defendant disputes that these two TSA documents show anything of the sort. First, defendant argues semantically that they state, not an 80 percent increase in efficiency, but only that the number of bin return trips was decreased by 80 percent. Defendant also challenges the three-month duration of the LAX pilot program as insufficient to establish the figures as definitive. The testimony of Ms. Bender on the point also supports defendant’s position. She posited that it would be routinely expected for injuries to decrease when substituting a cart for manual carrying and similarly that using a cart to carry material would necessarily result in less trips taken.

More basically, defendant argues that plaintiff made no attempt to compare the results achieved by the invention to those prior to its use nor a more specific comparison between the closest prior art to the invention’s method. *See In re DeBlauwe*, 736 F.2d 699, 705 (Fed. Cir. 1984) (holding that a claim of unexpected results failed because, *inter alia*, the patentee did not compare the claimed results with those achieved without the invention nor did it compare the patented device with the most similar prior art). Finally, defendant challenges SecurityPoint’s evidence on the point as failing to show

a nexus between the claimed results and the invention, pointing to plaintiff's touting the use of ergonomic carts, which is not a feature claimed by the patent. *See* Pl.'s Post-Trial Br. 33.

We disagree with defendant. The TSA documents show both decreased injury and decreased time spent returning trays to the beginning of the checkpoint. The latter at least clearly implies an increase in efficiency, which is directly linked to the patent's claimed method. Mr. Arroyo also testified that a person skilled in the art at the time would not have expected carts to increase efficiency because they would have expected them to clutter the area. We weight that testimony more heavily than Ms. Bender's because Mr. Arroyo's statements were in the context of the security screening checkpoint while Ms. Bender's comments were more general and in the context of the knowledge of an industrial engineer. Plaintiff has established, using government-generated data, the existence of an unexpected result as an objective indicator of its invention's novelty, and a statement touting an increase in any metric implies a comparison to the state of matters prior to the triggering event.

2. Long-Felt Need

A long-felt, unresolved need for a solution within a field of art is an objective indicator that an invention providing such a solution was not obvious to those skilled in that art at the time. *See WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1332 (Fed. Cir. 2016). The absence of an invention by itself is not evidence of need, however. *Iron Grip Barbell Co., Inc. v. USA Sports, Inc.*, 392 F.3d 1317, 1325 (Fed. Cir. 2004).

Plaintiff presents the court with the testimony of Ms. Serrano, Mr. Arroyo, and the inventor, Mr. Ambrefe, in support of its position that a long and unresolved need for improved airport security screening existed in 2002. Ms. Serrano, who worked for United Airlines from 1986-2006 and was involved in security screening operations from 1994 forward, testified that security checkpoint crowding was a problem as early as the mid-90s. She observed a lack of uniformity across various airports as to the process for divestment of passengers' personal items. After the attacks of 9/11/2001, she became the security manager for United at Denver International Airport, specifically tasked with improving wait times at checkpoints, which were often reaching "three to five hours" in length. Tr. 1455. She was a representative on a checkpoint redesign team, formed in October 2001, which included representatives from airlines, terminal operators and designers, the FAA, and

other airport consultants. She testified that the team never considered using a trays and carts method as a solution. Tr. 1457.

Mr. Arroyo also testified that, prior to September 2001, security screening of airline passengers was beset by a number of problems causing a drop in efficiency and complaints from passengers about the long waits. These included a lack of tray standardization and misplacement of passenger property. After September 2001, the problem became more acute. He testified that he observed “extreme clutter and disorganization.” Tr. 1566. He stated that adding space to address the clutter was not an option at many airports because space was at a premium. Tr. 1567 (using Newark Airport as an example). He was asked whether he observed the use of trays and carts in the method described by the 460 patent at checkpoints as of the patent’s priority date. His answer was that he had not observed such use.

Mr. Ambrefe’s testimony was similar to Mr. Arroyo’s regarding the chaotic organization of passengers and their property at checkpoints in 2001. He noted a difference in layout and design from airport to airport but remembered that all were crowded and lines were lengthy. These problems were only magnified after September 2001, said Mr. Ambrefe. These recollections, for plaintiff, establish a need in the field of security checkpoint operations for a greater efficiency and standardization of the screening process.

Defendant answers that SecurityPoint’s evidence, at best, showed a 10-month need for greater efficiency in screening operations: September 11, 2001-July 2, 2002 (patent’s priority date). In defendant’s view, this is insufficient to meet the requirements for this factor. Defendant cited *Ecolchem Inc. v. S. Cal. Edison Co.*, 227 F.3d 1361, 1377 (Fed. Cir. 2000), where the Federal Circuit upheld the district court’s rejection of a claim of long-felt need when the evidence showed a need lasting only a year. Defendant also criticizes Mr. Arroyo’s testimony as very general and insufficient to show how long any such problem existed or whether a skilled artisan recognized the need for the fix.

We agree with plaintiff. First, the law imposes no *per se* floor on the length of time needed to establish a long-felt need in the art. The circumstances of each individual obviousness determination are unique and are to be viewed as such by the finder of fact. Neither party disputes that the events of September 1, 2001, greatly magnified the problem of efficiency in

passenger screening at airports because of regulatory changes that greatly increased the need to divest items and due to the introduction of more sensitive magnetometers. Here, plaintiff presented the uncontroverted testimony of two individuals, experienced in the field of security screening operations, that the need was great even prior to September 11, 2001. Under these circumstances, we find that plaintiff has established a long-felt need for greater efficiency and standardization in the field of security checkpoint screening operations.

3. Failure of Others

The failure of others in the field of endeavor to meet the problem is evidence of an invention's novelty. *KSR*, 550 U.S. at 427. Plaintiff presents the court with the testimony of both its and the government's witnesses regarding failed attempts at improvements at specific airports and more general failures system-wide. It is clear from multiple witnesses and documents that the prevailing method prior to the widespread implementation of the trays and carts method was the manual carrying of trays from the end of the checkpoint back to the beginning.

Mr. Spriggs was involved in the design of security checkpoints for the FAA at the Detroit Metro Airport. He testified that a system very similar to the Brunetti patent was installed there in February 2002. Tr. 144. He stated that it was quickly outdated because it lacked sufficient space for passenger divestment and because the steel equipment tripped the new, more sensitive, post-9/11 magnetometers. He also testified that rather than use a chute to resupply the trays, as outlined in Brunetti, the Detroit airport screeners manually carried the trays from one end to the other.

Mr. Elliot, who is an assistant Federal Security Director at Baltimore-Washington International Airport ("BWI"), testified regarding an attempt to use an automated bin return as part of a new system at BWI in 2008. He recalled that the test was a failure. The tested system, which included a mechanized tray return placed on the bottom of the scanning device, was too slow in his opinion and was quickly abandoned. Although he was hesitant to place the blame squarely on the tray return, on the whole, he thought the system too slow. He also stated that the normal scanning devices at BWI did not have room for tray returns on the bottom and that a tray return placed on the top had its own set of problems, though he did not specify them. *See* Tr. 1490-91.

Mr. Arroyo informed the court regarding a similar effort to employ a slide rail system to return trays at the Newark airport in 2003 or 2004. He testified that it failed because it was too large and impeded the movement of passengers. Tr. 1707.

Mr. Gentry testified that, as part of his work for TSA in 2006, he considered different methods for bin return at checkpoints. These included rolling slides, other mechanized forms of tray return, and the use of carts. Prior to his position at DFW airport, he was stationed at the Omaha, Nebraska airport and helped to implement a variety of efforts to increase screening efficiency, none of which were carts. Despite these efforts at various locations, he recollected that, as of November 2006, there was no standardized system across TSA nationwide to return trays from the end of the checkpoint to the beginning. Ms. Serrano likewise testified that a standardized bin return system was never put in place during her tenure at the Denver International Airport. She and the checkpoint redesign team implemented other solutions, such as lengthening divestment tables, increasing the number of passenger lanes per checkpoint, and public education regarding screening procedures. She testified that these measures “didn’t have the results we had hoped for.” Tr. 1459.

Ms. Bender and her company also were employed to come up with efficiency solutions at several airports. She never suggested the use of carts to transport trays, albeit she did not consider tray return to be a problem at the airport checkpoints that she was retained to work on.

Defendant dismisses all of this evidence as largely irrelevant, because it argues that plaintiff has not shown, or even attempted to show, how the failures relate to the method of the 460 patent. Thus no nexus has been established between the failure and the invention, says the government. Further, defendant points out that Mr. Gentry testified as to having experimented with carts at DFW in 2006, and Ms. Bender testified that it would have been within the ambit of an industrial engineer to try using a cart to carry the trays.

It is not clear how the evidence that defendant points to regarding the general knowledge of an industrial engineer or Mr. Gentry’s failed attempts at employing carts at DFW support a finding that there was no relevant failure of others to solve this problem. It is not disputed that wait times at security checkpoints was a nearly universal problem at airports, especially after

September 11, 2001. The trial record is replete with examples of failed attempts to relieve congestion and speed up the lines, one of which was even an attempt at using carts. That an industrial engineer would have known to try carts and that one security screening expert did unsuccessfully try suggests only that SecurityPoint's method of using them was novel.

Further, requiring plaintiff to establish a nexus between its method and the failure of others to solve the problem makes no sense and begs an effort in the impossible. Defendant cited no law in support of that notion and we are aware of none. Further, we have the testimony of Mr. Gentry that TSA tried a close approximation of the Brunetti patent's system, but that it failed. We find that plaintiff established the widespread failure of others to solve the problem of checkpoint efficiency prior to the implementation of SecurityPoint's patented method.

4. Commercial Success

Plaintiff argues that it established the commercial success of its invention by showing its wide-spread adoption in the industry and the fact that there are no competitors in the field. SecurityPoint admits that its sharing of the revenue generated by advertising on trays with the airport operators is a big part of its success: \$7.8 million in revenue for 2012 and above \$15 million thereafter. The success of its advertising revenue model is consistent with a finding of commercial success, according to plaintiff, because the suitability of the trays for advertising is claimed by the 460 patent.

Defendant responds that the successes of plaintiff are unrelated to the patent's methods and therefore insufficient to establish commercial success as an indicia of non-obviousness. Defendant points to the testimony from Mr. Ambrefe and others at SecurityPoint regarding their extensive efforts to convince TSA to try the method and then their effort to market it to airports throughout the country. Citing *McNeil-PPC Inc. v. L. Perrigo Co.*, 337 F.3d 1362, 1370 (Fed. Cir. 2003), they argue that large marketing campaigns tend to show a lack of nexus between the invention and the patent holder's success in the marketplace.

We begin by noting that our holding is limited to the method as described in Claim 1. Therefore, we do not reach whether the advertising revenue is largely to account for plaintiff's success and whether that is attributable to the patent or not. The suitability for displaying advertising is

not part of the patent's first claim limitation. Further, that plaintiff underwent serious and long efforts to get both the TSA and the airport operators to adopt its method tends to cut against the finding of a nexus. Thus, under these circumstances, we do not find that this particular indicia supports plaintiff's position as it relates to the novelty of Claim 1.

5. Copying

Copying by others in the field is a strong indicator that a patent is not obvious. *E.g., Advanced Display Sys., Inc. v. Kent State Univ.*, 212 F.3d 1272, 1285 (Fed. Cir. 2000). The Federal Circuit has accepted circumstantial evidence to establish copying. *See Wyers v. Master Lock Co.*, 616 F.3d 1231, 1246 (Fed. Cir. 2010). Here, plaintiff presents the fact that TSA uses its method in over 400 airports nationwide and the fact that defendant has stipulated to infringement in this litigation. Msrs. Ambrefe and Linehan testified regarding SecurityPoint's efforts to entice TSA with its trays and carts method beginning in 2002. Mr. Hollifield testified that he was tasked with testing plaintiff's method in 2005 and did not remember any efforts to use a similar method prior to that test at the National Safe Skies Alliance. It is not in dispute that TSA has since copied the 460 patent's method nationwide.

Defendant challenges the relevance of those facts by arguing that plaintiff has not made a showing that the copied features relate to the technical merits of the invention. Defendant also argues that a stipulation of infringement is not, by itself, probative of copying. *See Iron Grip Barbell Co., Inc. v. USA Sports, Inc.*, 392 F.3d 1317, 1325 (Fed. Cir. 2004).

Plaintiff has established relevant and universal copying by the TSA after the date of the patent. The record evidence establishes that defendant tested plaintiff's patented method at the airports in Knoxville and Los Angeles in two separate pilot programs. They were both successful, and TSA has since implemented the method nationwide. The fact that defendant itself tested the patented method and then adopted it implies the direct link between the copied features and the invention. We find that the secondary indicia of copying supports a holding of non-obviousness.

6. Professional Approval

Praise and approval by others in the field is one of the oldest cited objective considerations when determining the novelty of an invention. *See*

Smith v. Goodyear Dental Vulcanite Co., 93 U.S. 486, 488-89 (1877) (citing praise from a rival inventor as indicative of the invention's novelty). "Appreciation by contemporaries skilled in the field of the invention is a useful indicator of whether the invention would have been obvious to such persons at the time it was made." *Vulcan Eng'g Co. v. FATA Aluminium, Inc.*, 278 F.3d 1366, 1373 (Fed. Cir. 2002).

Plaintiff cites a letter from the Federal Security Director at LAX, dated September 5, 2006, praising the "patented process" for reducing injuries and streamlining the screening process. PX 126. Plaintiff also points to the aforementioned TSA Informational Bulletin, PX 84, and the TSA Public Affairs Guidance, PX 202, both dated in December 2006, which tout the reduction in injuries and increased efficiency resulting from the trays and carts pilot at LAX. Mr. Ambrefe testified that he and Mr. Linehan received awards from the TSA security directors at LAX and the Orlando International Airport for their contribution to improving screening efficiency at those airports. Tr. 1326-28. Lastly, plaintiff cites the 2009 TSA Checkpoint Design Guide as evidence of professional approval because it contains a recommendation of the use of bin carts positioned in the same manner as Claim 1 of the patent. PX 159 at 27.

Defendant disagrees that these pieces of evidence support such a finding. As to the 2006 letter, defendant argues that it is not authored by someone versed in the patent's specifics and is mainly praising the cost savings aspect of SecurityPoint's business model as opposed to the details of the 460 patent's method. As to the rest of the cited evidence, defendant argues that plaintiff has generally failed to draw a connection between that praise and any particular feature of the patent, rendering the evidence inconclusive.

We agree with plaintiff. Plainly, the TSA was happy with results of the pilot study at LAX. Two publications and one internal document (the letter) praise the patent's method as increasing efficiency and decreasing injuries. The fact that the letter from the deputy security director also praises the cost savings does not render the other praise moot. Specifically stated is that the patented method prevents injuries by eliminating the need to lift the trays and streamlines the process while increasing throughput. PX 126 at 1. Also cited is the feature of the tray carts providing a place for the storage of bins at the proximate end of the scanner, which is touted in the letter as decreasing clutter and increasing the room for divesting passenger property on the divesting tables. *Id.* The position of the tray cart at the proximate end of the scanner is

specifically claimed, which shows a direct nexus between a claimed feature and the praise received. We find that plaintiff has established a *prima facie* case of professional praise and that defendant has failed to rebut it.

7. Commercial Acquiescence

The licensing of an invention to competitors is also relevant evidence of novelty, but the mere fact of licensing alone may not be enough to prove a patent not obvious if it cannot also be shown that the licensees did so out of respect for the patent rather than to avoid litigation expense. *See Pentec, Inc. v. Graphic Controls Corp.*, 776 F.2d 309, 316 (Fed. Cir. 1985). Here, the plaintiff points to its settlement of a district court infringement action against a private third party, which included a limited license granted to that company for certain airports, as establishing commercial acquiescence.

Defendant contends in response that the procedural history of that case (defendant there had an unresolved challenge to the validity of the patent prior to the settlement) is conclusive evidence to the contrary. Further, defendant points out that the licensee quickly went bankrupt after the settlement, indicating to defendant that the settlement was motivated by cost concerns. We find that, under these circumstances, plaintiff has not established commercial acquiescence as an objective indicator of non-obviousness. With only one license granted as part of a lawsuit settlement, we cannot conclude with any certainty that the licensee did so out of reverence to the patent as opposed to a cost-saving measure.

We find that the balance of the evidence regarding the objective indicia of non-obviousness weighs strongly in favor of plaintiff. Plaintiff has shown unexpected results from its patent's method, a long-felt need in the industry for the solution provided by the patent, widespread failure of others to relieve congestion at airport checkpoints prior to using the trays and carts method, universal copying of its method, and professional approval by defendant itself.

CONCLUSION

In sum, without some testimony from a person skilled in the art why he or she would combine the elements described in the prior art and use them in the manner taught by the patent, we cannot find it obvious. On its face, the patent is simple and employs common implements. Patents are presumed valid, however, and courts must guard against exercises in hindsight. The lack

of testimony regarding a reason to use trays and carts in the manner taught by Claim 1 of the 460 patent in combination with the numerous objective indicators of the invention's novelty lead to the conclusion that defendant has not proven by clear and convincing evidence that the patent in suit was obvious at the patent's priority date under 35 U.S.C. § 103. Thus, the case proceeds. The parties are directed to file a joint status report regarding the scheduling of further proceedings on or before November 18, 2016.

s/Eric G. Bruggink
ERIC G. BRUGGINK
Senior Judge